KNOWLEDGE SUMMARY

Pan American Health Organization
World Health Organization
REGIONAL OFFICE FOR THE Americas

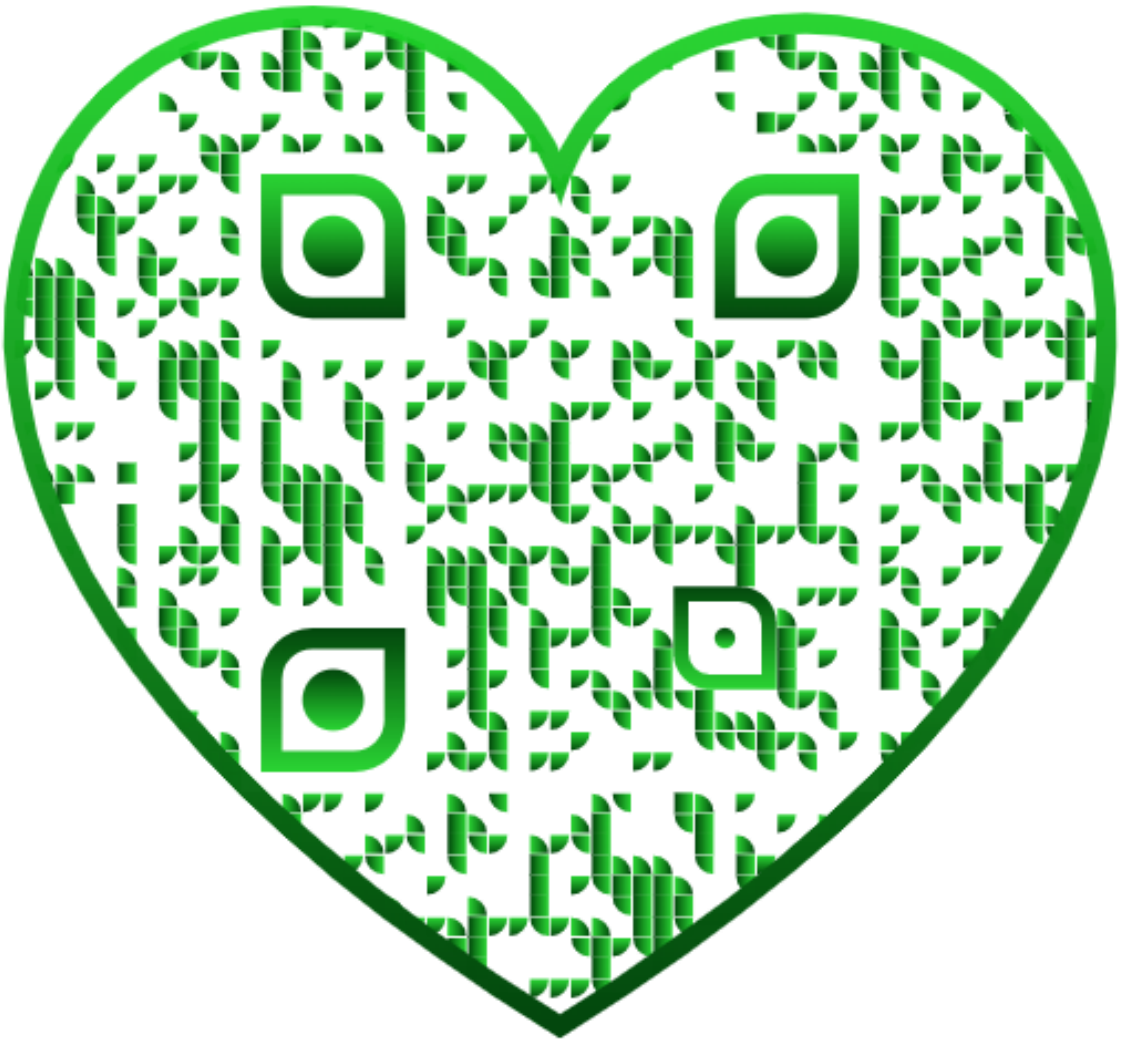
The Breast Health Global Initiative

uicc
global cancer control
A MEMBERSHIP ORGANISATION
FIGHTING CANCER TOGETHER

EARLY DETECTION:
BREAST HEALTH AWARENESS AND EARLY DETECTION STRATEGIES

About this Knowledge Summary (KS):

This summary covers the major breast cancer early detection strategies including breast cancer education and awareness (patient, community and health professional education), breast health awareness and breast self-detection and clinical breast exams (CBE). A description of how to perform a CBE is included in the Early Diagnosis: Signs and Symptoms summary. A discussion of breast cancer mammographic screening is provided in the Early Detection: Screening Programs for Breast Cancer summary.



KEY POLICY SUMMARY

Early detection programs

- Detecting breast cancer early improves survival, lowers morbidity and reduces the cost of care, if patients can be promptly diagnosed and effectively treated.
- An effective early detection and diagnosis program includes:
  - Breast health awareness education;
  - Reducing barriers to accessing care;
  - Clinical breast exam (CBE) performed by primary care providers;
  - Timely diagnosis for all women found to have abnormal findings and prompt stage-appropriate treatment for all women proven by tissue diagnosis to have breast cancer;
  - If feasible and appropriate screening of at risk populations with CBE alone or in conjunction with screening mammography performed in a cost-effective, resource-sustainable and culturally-appropriate manner.

Breast health awareness education

- Awareness education is an integral part of all early detection programs.
- Breast health awareness includes public health and professional medical education on the risk factors and symptoms of breast cancer and the importance of seeking medical evaluation for breast concerns.
- Breast health messages should emphasize that a woman should promptly seek and receive care when she notices a breast mass, thickening or other new, persistent finding.
- Collaboration with cancer survivors, advocacy and community groups is crucial for the effective creation and dissemination of breast health awareness messages.

Clinical breast examination

- Clinical breast exam (CBE) performed by a trained healthcare provider involves a physical examination of the breasts and underarm. CBE is a basic element of breast health care and should be offered to any woman with a breast finding that she identifies as abnormal for her.
- CBE should be incorporated into standard medical school curricula and training programs.
- Quality assurance measures should be in place to ensure that health professionals are proficient in CBE and know how women with an abnormal CBE can access diagnosis services.
- CBE can be performed by trained non-physician providers in low resource settings.
- CBE screening is a lower cost, less resource intensive screening approach than is mammographic screening and is appropriate for previously unscreened populations.
- In addition to using CBE to evaluate breast complaints, CBE may be used to screen for breast cancers as part of a breast health awareness education program.

Interventions across the continuum of care according to resource level

- Breast cancer programs in low- and middle-income countries (LMICs) should follow a defined care pathway in line with available resources and capacities to allow for coordinated incremental program improvement across the continuum of care (see Table 1).
- Mammographic screening has been shown to reduce breast cancer mortality in high-resource settings (see Early Detection: Screening Programs for Breast Cancer KS), but CBE alone may be an acceptable screening method when mammographic screening is unavailable, unaffordable or unrealistic.
- Ultrasound imaging is not recommended as a screening modality but is important as a diagnostic tool for evaluating breast findings like masses or thickenings.

INTRODUCTION AND THE CHALLENGE

Breast cancer early detection requires early diagnosis of women with breast cancer symptoms, and in addition can include more intensive breast cancer screening in women without recognized cancer symptoms. Both early diagnosis efforts and early detection screening programs can contribute to data collection on breast cancer incidence and mortality in a community or region. When properly collected and documented in hospital-based, regional or national cancer registries, data on tumor size and stage at diagnosis can inform breast cancer control programs about the effectiveness of early detection efforts. Both early diagnosis and screening programs should consider the cultural context of the community served, the resources available for program support and the sustainability of such efforts over time (see Table 2).

Early diagnosis of symptomatic women relies on breast cancer awareness by patients, their community and frontline health professionals. It requires women to have timely access to breast evaluations, follow-up diagnostic services (imaging, biopsy and pathology) and breast cancer treatment as appropriate for the stage of disease. Health systems require trained frontline personnel competent in CBE and breast health counseling to coordinate care through a referral network for timely breast cancer diagnosis and treatment. Centralized diagnosis and treatment facilities are resource-efficient, if patient can reliably be triaged for care (see Early Detection: Breast Cancer Signs and Symptoms and Planning: Improving Access to Breast Cancer Care).

The challenge is to increase early detection of breast cancers (down-staging or stage-shifting) and improve cancer outcomes by optimizing available resources and providing accessible, appropriate and acceptable breast health services. Effective early detection programs can lead to down-staging or stage-shifting by increasing the proportion of breast cancers detected at an early stage when treatment is more effective. When linked to effective treatment, down-staging can lead to better breast cancer outcomes and survival rates.

Although the gold standard for early detection programs in high-resource settings is mammographic screening, clinical breast exam (CBE) in low-resource settings has been used -and is a necessary tool in any breast health program for frontline evaluation of patients with breast symptoms. Early detection screening programs can be opportunistic (i.e., initiated during routine patient visit) or organized (i.e., initiated by invitation sent to a targeted at-risk patient population (see Table 3).

POLICY ACTION OVERVIEW

Preplanning

- Identify existing early detection efforts, is a new plan needed?
- Identify stakeholders, key decision-makers and champions.

Planning Step 1: Where are we now? (Investigate and assess)

- Assess existing breast health awareness and early detection programs.
- Assess community partnerships (advocacy groups, public health services, associations).
- Identify barriers to early detection (structural, sociocultural, personal, financial).

Planning Step 2: Where do we want to be? (Set objectives and priorities)

- Define target population for breast health awareness and breast cancer screening
- Set objectives that promote a common goal for early detection: down-staging breast cancer detection and diagnoses to improve cancer outcomes.
- Breast health awareness education and clinical breast exams (CBEs) should be a standard part of breast cancer awareness efforts.
- When women find lumps or thickenings in the breast, they need access to facilities where they can undergo a diagnostic work-up to determine if it is a benign or malignant process and receive appropriate treatment.

Planning Step 3: How do we get there? (Implement and evaluate)

- Follow a resource-stratified pathway appropriate to the resources available: early detection programs can be developed in low-resource settings and be incrementally improved as more resources are allocated to the program using a resource-stratified pathway (see Table 1).
- Partner with key national and local stakeholders, respected public figures, survivors, advocates and media to launch a coordinated campaign.
- Optimize primary care services and referral networks to improve awareness and reduce delays.
- Monitor quality of education and screening and evaluate impact.
- Identify barriers to early detection (structural, sociocultural, personal, financial).

WHAT WE KNOW

Breast health awareness programs

Breast cancer early detection: In many LMICs, and sometimes in high-income countries, women delay seeking medical evaluation of breast changes for months or even years, especially when they do not hurt or cause lifestyle problems. Early cancers are generally painless lumps, while advanced cancers progress to become large, painful and/or ulcerated tumors. The goal of breast health awareness is to educate women about the importance of diagnosing cancer at early stages when treatment is easier and outcome is better. Advanced cancers demand more extensive therapies and are more likely to spread (metastasize) to other organs at which point they no longer can be cured.

Educational targets: Breast health awareness efforts include teaching about breast cancer symptoms, e.g., palpable lumps or asymmetric thickening, skin and/or nipple changes, especially those that worsen over time (see Early Detection: Signs and Symptoms KS). The importance of timely medical evaluation is emphasized. Because most women in LMICs (and 1 in 6 in high-income countries) have advanced cancers at diagnosis, programmatic goals include 1) heightened cancer awareness in the community, 2) increased breast evaluation training for frontline clinical staff, and 3) improved access for breast cancer testing and treatment, which together can reduce mortality. Even before the introduction of screening programs in the UK, over 50% of the decreased mortality in women younger than 65 years of age was associated with an increase in breast cancer awareness and down-staging.

Cultural context: Breast cancer awareness messages are more effective if they are culturally appropriate and developed with community input. Messages should emphasize that breast cancer can be treated best if treated early, and the majority of women treated for early breast cancer will recover after treatment to live healthy and productive lives. While effective treatment and care options can still help those with advanced disease, early diagnosis allows for less invasive treatments, including breast conservation surgery rather than mastectomy (if radiation treatment is also available). Community input can help identify general misconceptions about breast cancer detection, diagnosis, treatment and/or outcomes. For example, if in a community there is reported fear of breast disfiguration during diagnosis, it might be important to stress that breast cancer is diagnosed by a small biopsy not by breast removal. If in another community, breast cancer is reported to be considered an incurable disease, it might be important to provide examples of women who have recovered from breast cancer after treatment (breast cancer survivors). Breast cancer advocates, including but not limited to breast cancer survivors, can play an important role in breast cancer awareness programs. Efforts to increase general public awareness and openness, and reduce stigma about breast cancer can result in more women who have breast cancer symptoms or breast concerns seeking expeditious and reliable care (see Planning: Improving Access to Breast Cancer Care KS).

Breast health awareness and self-detection

Most breast tumors are discovered by women themselves, although not necessarily through formal breast self-examination. The critical component of breast health awareness is "knowing your normal". Health professionals should be prepared to educate women about the risk factors and signs and symptoms of breast cancer as part of breast health awareness. Teaching breast self-exam (BSE) may be part of breast health awareness and early diagnosis strategies, but is not recommend by itself as an early detection screening method. Studies that focused heavily on formal BSE training as a screening method showed that BSE led to increased breast biopsies without improving mortality.

CBE as a diagnostic tool

Clinical breast exams (CBEs) are a necessary component of early detection efforts. CBE should be part of routine breast health care, and part of any evaluation for a woman who presents with a breast concern (e.g., breast mass, skin or nipple change). A CBE should include an axillary (underarm) lymph node examination. Adequate time is required for a CBE (6 to 10 minutes), especially when imaging is not routinely employed. There is no clear superiority of any one CBE technique. Critical components of a CBE include a visual inspection of the breasts, proper positioning of the patient for breast palpitation in both the upright-seated and lying-on-the-back positions, and thoroughness (use of a vertical-strip or concentric circle search pattern) with proper position and movement of the fingers. With proper training, health professionals, including non-physicians, can achieve proficiency in CBE. Quality assurance protocols are required to ensure continued health professional competency in CBE (see Early Detection: Signs and Symptoms KS for details on CBE techniques, training, and quality assurance).

Cultural context: A culturally sensitive approach to breast exams and breast health counseling can reduce a woman's discomfort and anxiety during a breast health visit, and allow her to make informed decisions about her preferred breast health care.

Effectiveness of CBE: Studies on the effectiveness of CBE report a wide range of data and suggest that CBE can find masses not reported by women (asymptomatic cancers), but may also miss small tumors detectable by imaging modalities (see Early Detection: Screening Programs for Breast Cancer KS). Certain groups of women, such as obese women or younger women with more nodular breast tissue, may receive less benefit from CBE.

CBE as a screening tool

As a screening modality, CBE requires fewer resources compared to mammography and can be implemented in settings where mammography is not feasible. When used for screening, CBE is often started among women age 30, as a breast health awareness education tool to help familiarize women with their own breasts. CBE can be used as a transitional screening method during the introduction of a mammography screening program; CBE pilot screening projects can help inform larger screening projects about the patient population and effective recruitment strategies. Successful implementation of CBE screening is dependent on resource allocations for trained staff and access to follow-up services or facilities for pathology, diagnosis and treatment, as well as cultural considerations. Studies have shown CBE screening to be associated with lower stage tumor at diagnosis and improved age-standardized incidence rates for advanced-stage breast cancer. However, CBE screening does not find as many of the very earliest stage cancers as screening mammography.

Community support: Community support for participation in early detection screening programs must be match by community support for follow-up diagnosis and treatment. Studies have shown that barriers to early treatment include health system obstacles such as lack of access to care, high cost of care, and patient issues such as fear of diagnosis and treatment (see Planning: Improving Access to Breast Cancer Care KS).

Opportunistic versus organized screening: CBE can be an effective opportunistic or organized screening method. Opportunistic screening can occur during any health care visit if the health system has prepared providers (through reimbursement and protocols) to perform breast health exam and refer patients for further screening test (i.e.. imaging), if appropriate. In opportunistic screening, additional diagnostic services and care is coordinated by the woman and her health care team. Opportunistic screening differs from organized screening in that organized screening invites a specific at-risk population to participate outside of routine health care visits, and has preset screening intervals (e.g. every one to two years). Both opportunistic and organized screening programs require quality control measures, including data on false-positive, false-negative and recall rates (see Early Detection: Screening Programs for Breast Cancer KS for a detailed discussion of quality measures).

Cost and effectiveness: CBE is a less expensive screening modality than mammography; however, the exact cost of early detection programs will vary by region and depends on the breast cancer incidence rate, available resources and provider expertise. Cost-effectiveness studies of CBE early detection programs continue to be reported from LMICs. Studies in Ghana, Peru, Central America (Costa Rica and Mexico), sub-Saharan Africa and East Asia, India and Ukraine suggest screening with CBE may reduce breast cancer deaths. Low-cost early detection interventions would appear to meet conventional criteria for cost-effectiveness based on marginal costs per year of life saved, or quality adjusted year of life saved. While there is some debate about how many lives are saved by CBE screening, there is no debate that CBE is a necessary component of a breast health program and strategy.

PLANNING STEP 1:
WHERE ARE WE NOW?

POLICY ACTION:
INVESTIGATE AND ASSESS

Assess burden of disease

- Information on the stage of disease at diagnosis is required to determine the focus of early detection programs. Cancer registries provide the best region-specific data. If no registry is available, hospital data can be used, with the limitation that institution-specific data suffers from patient selection bias.

Assess existing early diagnosis and early detection programs

- Determine what breast cancer awareness efforts are ongoing at a national, regional or local level by the health system as well as advocacy and community groups.
- Determine what early detection efforts are currently being implemented at a national, regional or hospital-based level.
- Assess the size of the target population for the early detection program and confirm services are in place to meet the screening, diagnostic and treatment needs.

Assess barriers to early detection

- Identify structural, sociocultural, patient and financial barriers to early detection and screening programs.
- Consider using focus group discussions or interviews with key stakeholders (e.g., patients, patient advocates, survivors, health professionals, community leaders).

Assess cost and potential effectiveness of CBE screening programs

- The costs of CBE screening includes the cost of training personnel, delivery of services and monitoring and evaluation.
- Potential effectiveness will depend on breast cancer incidence rate and target population, health professional expertise and availability and resources.

Assess health system capacity

- Early detection programs require the additional support of diagnostic and treatment facilities.
- Coordinate development or expansion of early detection programs with the development or expansion of diagnostic and treatment programs using coordinated resource-stratified pathways.

Assess evaluation capacity

- Evaluate early detection programs routinely to ensure high-quality, reliable screening tests are being performed safely.
- A program self-assessment toolkit is available from the WHO at www.who.int/cancer/publications/nccp_tool2011/en/index.html

WHAT WORKS

Breast cancer awareness

From a patient and community perspective: Breast cancer awareness efforts targeted to women and their communities can augment early diagnosis efforts and increase participation in early detection screening programs. Involving breast cancer survivors or women undergoing breast cancer treatment in breast cancer awareness planning can provide insight into effective messages and help identify barriers to breast cancer early detection; including breast cancer survivor stories in awareness messages can provide hope to women who suspected they have breast cancer, and encourage women to participate in early diagnosis or early detection screening programs (see Planning: Increasing Access to Breast Cancer Care KS).

From a health professional perspective: Breast cancer awareness efforts targeted to health professionals, especially those who will be the point of contact for women who seek breast health care, should include training in CBE (including the signs and symptoms of breast cancer), and breast health counseling (see Early Detection: Signs and Symptoms KS).

CBE screening programs

For any early detection program to be successful, it must be well-organized and sustainable, target a well-defined at-risk population, and establish coordination and quality across the continuum of care. Because CBE screening programs are generally linked to breast health awareness education and possibly cervical cancer screening, the age of initial CBE screening is younger than what is recommended for mammographic screening. While mammographic screening programs are not initiated until ages 40, 45 or 50, CBE screening can be provided to women in their 30s.

CBE screening programs should collect and contribute data on breast cancer tumor stage, breast cancer incidence rates and other pre-identified program metrics. Participants in screening programs, including pilot programs, should be fully informed about potential benefits and harms of tests, including possible increased anxiety, the possible need for additional tests and, if cancer is detected, the available treatments options (see Early Detection: Screening Programs for Breast Cancer KS). To see a group effect of screening, effective program should attempt to screen at least 70% of the target population. With CBE screening, between 10-20% of women will have findings warranting diagnostic work-up, most of which will be benign findings like cysts, fibroadenomas, or palpably asymmetric but normal breast tissue responding to hormonal cycling. Even in high-risk populations, less than 1-2% of screened asymptomatic women will be found to have cancer. For these reasons, screening programs of any type must provide women with access to diagnostic work-up of abnormalities identified during screening.

Opportunistic versus organized screening (Table 3): Opportunistic programs provide screening to women accessing the healthcare system for some other purpose and request or are offered screening, while organized programs provide outreach to all women in the targeted subgroup at heightened risk in the population. From a public health perspective, organized screening is superior to opportunistic screening, because 1) it has greater potential to reduce cancer mortality rates (by reaching more people); 2) it provides more equitable access to care (participation is usually not dependent on patient payment); 3) it provides population-level approach to protecting patients from the potential harms of screening (quality control may be easier); and 4) it decreases overall cost of individual screening (economy of scale). However, significant challenges exist to organized screening, particularly in LMICs or regions with decentralized care and limited available resources. Organized CBE screening programs require 1) data to identify at-risk target population; 2) resources and processes to guarantee high coverage and participation of the target population; 3) available health professionals with expertise in CBE; 4) an effective referral system for diagnosis and treatment and 5) a process to monitor and evaluate the program.

Long-term planning requires quality control and data collection: All early detection programs should be monitored for quality of screening techniques, false-negative, false-positive and recall rates, timeliness and quality of follow-up diagnostic and treatment procedures. Data should be systematically collected, validated, reviewed, and reported, and used to identify deficiencies and improve program performance.

Coordination of care across the continuum: Early detection is only effective when diagnostic and treatment resources are also available and accessible. Investing in higher-level resources for screening (e.g., population-wide, organized mammography screening) requires parallel investment in quality control efforts, follow-up tissue sampling, pathology for suspicious findings and timely treatment for confirmed diagnosis. Otherwise, detection subjects women to a potential diagnosis without available care, and places a financial burden on the health system. When resources are limited, CBE screening is the best initial approach for starting an early detection program.

PLANNING STEP 2:
WHERE DO WE WANT TO BE?

POLICY ACTION:
IDENTIFY OBJECTIVES AND PRIORITIES

Define target population and approach

- Use local breast cancer incidence and demographic data to identify and define at-risk populations.
- While certain demographics (age, reproductive history, family history) help define groups at heightened risk, early detection and screening program selection criteria are primarily based on gender and age (e.g., women starting mammographic screening beginning at a certain age: 40, 45 or 50) and at defined intervals (every 1-2 years) as determined by local factors, resources and programmatic choices by local decision-makers.
- Criteria for the target population may vary by the type of program (opportunistic or organized) screening tool be used (CBE with or without mammography), and the program scope (pilot program or large scale coverage).
- Identify gaps and barriers to early detection program activities.
- Identify structural barriers (human resources capacity and training, geographic location, transportation, referral system, competing health priorities).
- Identify socio-cultural barriers (stigma, myths and misconceptions, religion, fatalism, gender of provider, self-efficacy and status as a decision-maker).
- Identify personal barriers (lack of awareness or low health literacy, negative healthcare experience, competing family and work priorities, fear of being ostracized).
- Identify financial barriers (socioeconomic, direct and indirect, opportunity cost, childcare, lost wages).
- Determine socioeconomic status of service population and identify possible high-risk, marginalized and disenfranchised populations.

Set achievable objectives

- Objectives should promote a common goal for early detection: down-staging breast cancer detection and diagnoses to improve cancer outcomes (e.g., increasing breast health awareness in the community through partnering with advocacy groups training primary care providers in breast health awareness counseling and CBE, and increasing availability of appropriate diagnostic and treatment modalities).
- Activities to raise awareness are most effective when coordinated with improved access to timely diagnosis and treatment.

Set priorities and determine feasibility of interventions

- Consider assessing feasibility of program objectives through demonstration or pilot projects.
- Follow a resource-stratified pathway for program development that identifies available resources across the continuum of care.

HOW DO WE GET THERE?

Public awareness: Public awareness and education campaigns may contribute toward reducing stigma, myths and misconceptions about breast cancer detection and treatment. At an individual level, advocacy can impact a woman's decision to take part in screening and improve her understanding of the risks and benefits of screening. Breast cancer awareness campaigns are most effective when tailored to the local community (see Planning: Improving Access KS).

Collaborative efforts: Determining the most appropriate early detection method requires joint efforts by hospital systems, regional centers and ministries of health. Other stakeholders including patients, survivors, advocates, community leaders and academic and financial institutions should also be engaged in this process. Issues to be considered include: how to optimizing existing early detection efforts by reducing barriers to accessing care, improving the quality and cultural sensitivity of existing programs and augmenting diagnostic and treatment services to support new early detection efforts.

Pilot projects can be used to identify acceptable and sustainable practices and inform policy decisions. When deciding between optimizing existing programs or investing in new initiatives, consider local needs, regional expertise, current program effectiveness and resource availability.

Optimizing primary care visits: Studies from LMICs suggest that women without regular primary care providers have lower cancer awareness and are less likely to participate in cancer screening activities. Programs that improve access to primary care providers and expand referral networks can improve early breast cancer detection, assuming that primary care providers are educated in early detection techniques such as CBE and are able to provide access to breast diagnostic services for patients with abnormal breast findings.

Optimizing referral services: Efficient referrals are a key component the WHO Framework for Health Systems Performance Assessment. Studies in LMICs have observed protracted referral times to specialty care resulting in long delays and multiple visits (7.9 clinic visits on average) before existing cancers are diagnosed and treatment is initiated. Such delays and unnecessary clinic visits result in increased tumor size, worsened outcomes and increased patient and health system costs. Improving referral networks, communication between providers and timely access to care is essential to optimizing early detection efforts.

Mixed methods for early detection: In some countries, mixed screening strategies may be appropriate based on differences in local availability of resources and expertise. For example, a rural setting may be able to implement breast health awareness programs, tissue biopsy followed by mastectomy for definitive surgical treatment, while synchronous implementation in urban, higher resource settings of the same country could include mammographic screening, core needle biopsy followed by breast conservation therapy with lumpectomy followed by radiation therapy for definitive local cancer control. Mobile screening units may decrease inequities in access to care'; however, this approach can substantially increases the overall cost of screening programs. Other studies have found that the scaling-up availability of effective early detection programs can result in substantial improvement in overall health at a relatively low overall cost.

Data collection: Health professionals and health ministers must work together to support the collection and consolidation of data and tracking of indicators based on national standards and goals. Collaborative efforts can help decentralized systems develop organized breast screening programs (see Case Study #1).

Resource-stratified care pathways: Using a resource-stratified pathway allows programs to begin with breast cancer awareness, and diagnostic CBE, and move along the pathway toward organized mammography screening as more resources become available (see Table 1).

PLANNING STEP 3:
HOW DO WE GET THERE?

POLICY ACTION:
IMPLEMENT AND EVALUATE

Establish financial and political support

- Secure necessary political and financial support for program intervention.
- Regional, national and international advocacy groups are key strategic partners in the development and advancement of early detection programs, including fundraising and community education.
- When deciding between optimizing existing programs or investing in new initiatives, consider local needs, regional expertise, current program effectiveness and resource availability.

Coordinate, disseminate and implement

- Partner with key national and local stakeholders, respected public figures, survivors, advocates and media to launch a coordinated campaign.
- Early detection programs should include an early diagnosis component (e.g., programs to increase awareness, reduce access barriers to diagnostic and treatment facilities), and a screening component (i.e., CBE or mammography; opportunistic or organized).
- Healthcare systems are central to coordination of care and optimal use of available resources.
  - Centralized cancer facilities can serve as referral centers where more advanced screening, registries and monitoring, diagnosis and treatment can be performed.
  - Primary care services can be optimized by training primary care providers in CBE and raising breast health awareness.
  - Referral networks can be optimized to reduce delays.
- Consider access barriers for low-resource communities with screening and treatment facilities available at centralized cancer centers.

Monitor and evaluate

- Predefined metrics should be established at the beginning of the program to measure its relevance, effectiveness, and impact; impact measures include tumor size at presentation and participation rates.
- Monitor quality and safety of screening programs (e.g., education, training and expertise of personnel, standardization of protocols, time from referral for diagnosis to diagnosis, time from positive diagnosis to treatment).

CONCLUSIONS

Breast cancer awareness is a key component of early detection efforts. It is essential that women know the most common symptoms associated with breast cancer, such as lumps and thickenings, and understand that prompt evaluation and early detection improves outcome. Women need access to health facilities that can provide accurate diagnosis, and they must be empowered to access these services in a timely fashion. Planning and implementation of breast health awareness education and programs should include all stakeholders: women, men, community leaders, health professionals, health system administrators and policymakers. Advocacy groups can provide valuable support and influence public and political awareness. At a minimum, healthy systems should be prepared to evaluate women who present with breast complaints, and refer them for timely diagnosis and treatment. Health professionals need to be trained in clinical breast exams (CBE) and breast health counseling, including culturally sensitive patient-clinician communication strategies.

Early detection screening methods should realistically match available resources (human resources, equipment, facilities) and community support and access to care. CBE provides a lower-cost screening modality than mammography, requires fewer resources to implement and is most appropriate in settings where early detection has not previously been available to the public. In LMICs, CBE can function as a transitional screening modality along a resource-stratified pathway before introduction of screening mammography, which may or may not be implemented depending on existing resources and current cancer stage at diagnosis. Identifying, assessing and addressing structural, sociocultural, personal and financial barriers to accessing available breast cancer services is essential to improving early detection efforts. Implementation research on breast cancer awareness efforts, particularly those studies performed in developing countries, can continue to inform and guide program development. Successful implementation of early detection program, cognizant of local barriers, can result in down-staging of breast cancer and improved overall health outcomes.

Table 1. Resource-stratified pathway for breast cancer early detection and screening programs.

	Level of Available Resources			
	Basic (Level 1)	Limited (Level 2)	Enhanced (Level 3)	Maximal (Level 4)
Public Education and Awareness	Development of culturally sensitive, linguistically appropriate local education programs for target populations to teach value of early detection, breast cancer risk factors and breast health awareness (education + breast health awareness)	Culturally and linguistically appropriate targeted outreach/ education encouraging CBE for age groups at higher risk administered at district/provincial level using healthcare providers in the filed	Regional awareness programs regarding breast health linked to general health and women's health programs	National awareness campaigns regarding breast health using media
Detection Method	Clinical history and CBE	Diagnostic breast US +/- diagnostic mammography in women with positive CBE Mammographic screening of target group	Mammographic screening every 2 years in women ages 50-69 Consider mammographic screening every 12-18 months in women ages 40-49	Consider annual mammographic screening in women ages 40 and older Other imaging technologies as appropriate for high-risk groups
Evaluation Goal	Breast health awareness regarding value of early detection in improving breast cancer outcome	Downsizing of symptomatic disease	Downsizing and / or down-staging of asymptomatic disease in women in highest yield target groups	Downsizing and/or down-staging of asymptomatic disease in women in all risk groups

Adapted from the Breast Health Global Initiative (BHGI) guidelines, 2008

DEFINITIONS: Basic (level 1) resources are core resources or fundamental services absolutely necessary for any breast health care system to function; basic-level services are typically applied in a single clinical interaction. Limited (level 2) resources are attainable with limited financial means and modest infrastructure. Enhanced (level 3) resources are optional but important, and improve options and outcomes. The maximal (level 4) resource-allocations are lower-priority, higher-cost options, and are generally not recommended in low-or limited-resource settings.

Table 2. Early detection efforts versus screening programs: definitions, impact, requirement and benefit.

	Early Detection	Screening
Definition	Signs or symptoms of breast cancer in an early disease stage identified by a woman or her health care team.	Testing across an at-risk population to identify women who have breast abnormalities suggesting cancer.
Impact	Testing across an at-risk population to identify women who have breast abnormalities suggesting cancer.	Improved survival rates of targeted population; identifies breast concerns that may not be life-threatening cancer.
Requirement	Breast cancer awareness by patient and community; breath health awareness by health care team; access to health care.	Quality assurance methods Infrastructure needed to ensure follow-up diagnosis services and treatment services for positively screened women may exceed infrastructure in place for early diagnosis. Participation of large percentage of target population required to achieve cost-effectiveness of program.
Benefit	Improved health and quality of life, lower cost of care, less complex care for some patients.	Greater potential population-based impact: improved health and quality of life, lower cost of cancer-treatment per average patient.

Table 3. Opportunistic versus Organized Screening with CBE: target population, process, requirements, impact.

	Opportunistic Screening	Organized Screening
Target	Individuals during clinical encounter	At-risk population
Process	Signs and symptoms of breast cancer identified by a woman and/or her health team during a clinical visit; referral for imaging, biopsy and pathology as needed	Breast examination performed across an at-risk population of asymptomatic women with follow-up care for positive tests as needed (i.e., imaging, biopsy, pathology)
Requirements	Breast health awareness by women and front-line health professionals Reduced barriers to follow-up care within individual healthcare system	Identify at-risk population with potential for high participation rate (70% coverage recommended) Infrastructure in place to provide follow-up care to patients with positive screening findings (10 -15% of screened group) Quality assurance methods
Health system impact	Lower cost Less complex health system coordination Impact at individual patient level Less equity as it favors patients who already have healthcare system access	Higher cost Requires complete health system coordination Impact at population level Greater equity since outreach is at population level

Case Study 1: Using a national tracking system to implement a systematic mammography screening program.

BHGI 2010 GLOBAL SUMMIT: HEALTH POLICY AND EARLY DETECTION, BRAZIL

Background:

A national survey found that 75% of Brazilian women age 40 years or older had undergone CBE at least once in their lives, and 40% within one year prior to the survey. There were notable regional differences, as well as differences related to household income: 52% of women from low-income households compared to 96% of women from high-income households reported having undergone a CBE. In addition, 71% of women age 50-69 years reported having undergone mammography at least once in their lives, and 54% within 2 years. Mammography coverage was greater in the South and lower in the North. While there were no significant regional differences in mammography coverage overall, there were important regional differences within the low-income population, with a mammography coverage of 28% in the North, 56% in the South, and 67%, in the Southeast.

Study:

Although Brazil's National Program for Early Detection of Breast Cancer recommends annual CBE for all women starting at age 40 years old and mammography every 2 years for women age 50-69 years old. To date, only one municipality, Curitiba, in late 2009, has established organized breast cancer screening.

Outcome:

A new program to track publicly-financed mammograms and breast biopsies, 'SISMAMA', was launched in December 2008 that requires a government facility, a contracted private imaging center or a pathology laboratory to provide certain standardized information that is recorded in SISMAMA prior to reimbursement. Over 1.5 million mammograms have been conducted nationally and entered into SISMAMA to be analyzed.

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